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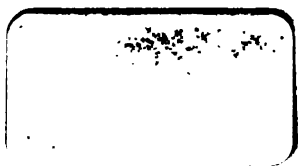
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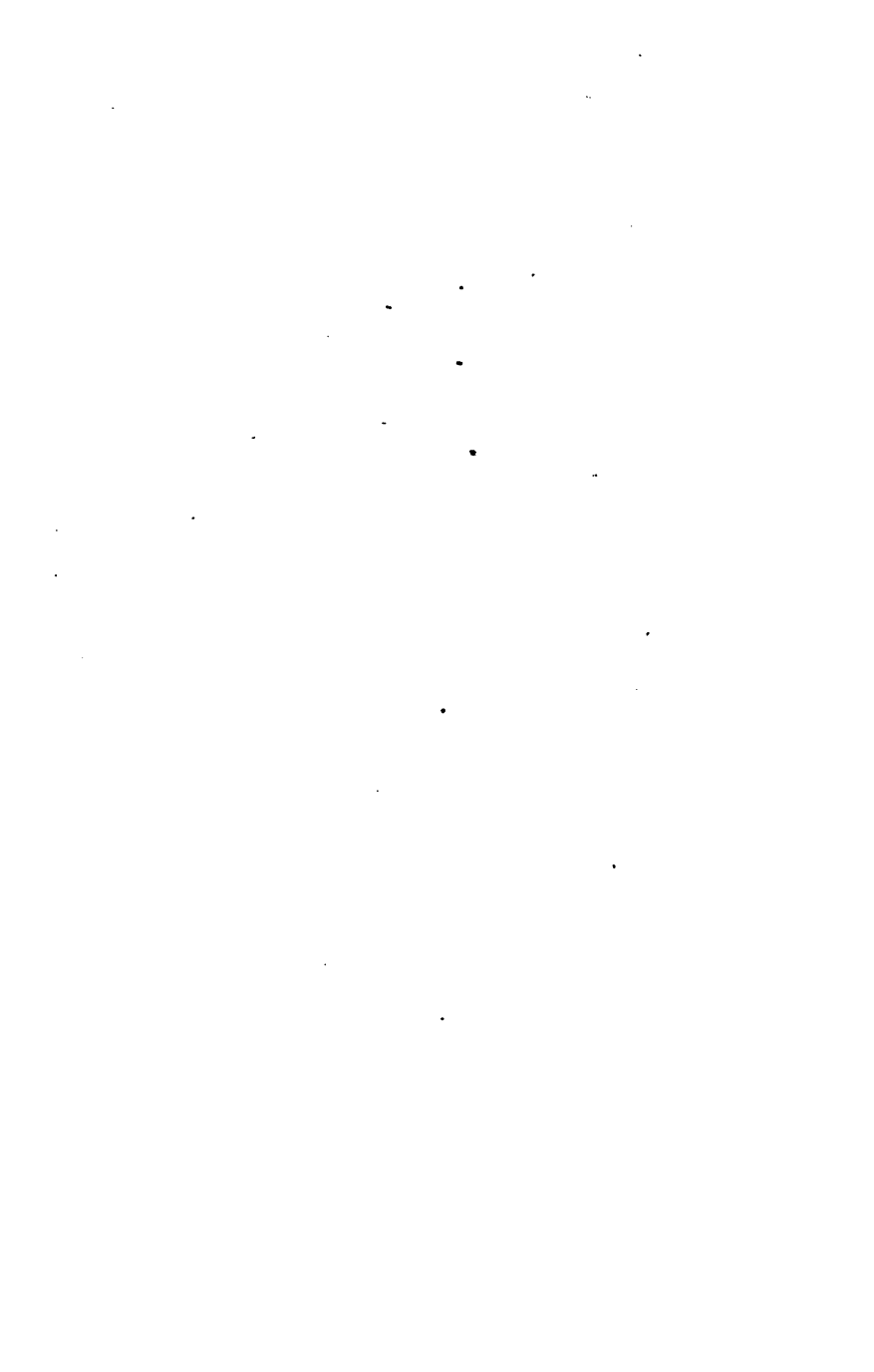
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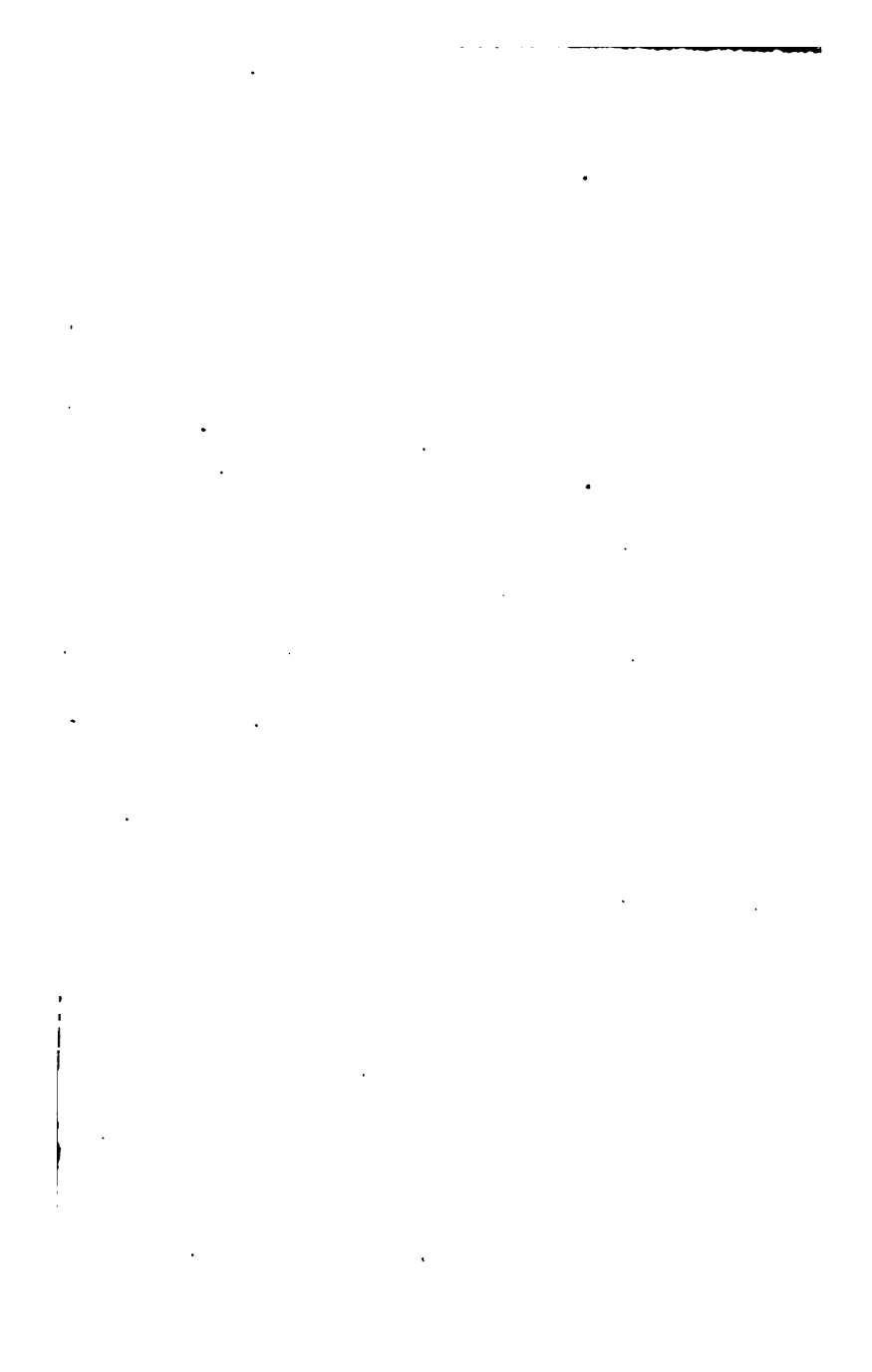
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# INFANTILE DISEASES.



ON THE

**Causes, Prevention, and Treatment,**

OF

**INFANTILE DISEASES :**

*... ..*

*SHOWING BY WHAT MEANS*

*THE PRESENT MORTALITY MAY BE*

*GREATLY REDUCED.*

BY

**SELBY NORTON, M.D.**

FELL. OBSTET. SOC. LOND.



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## PREFACE.

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THROUGHOUT the following work, by the word "infant" is meant a child under one year of age. Most persons, when treating of the subject of infant mortality, take the deaths under *five* years as their text. Now, this appears to the author a very great mistake, as there is no excessive mortality between four and five years, three and four years, two and three years, or one and two years; whilst under one year the number of deaths form a quarter of the whole annual mortality of this country.

Such a vast and totally disproportionate number of deaths occurring during the first year of existence, render it absolutely certain that some fundamental error in principle is being universally committed.

The author being fully satisfied that he has been able to detect such error, feels bound, by all the laws of humanity, to publish the results of his observation and experience, with a view to the preservation of the helpless and innocent.

In the hope that he may have the good fortune to be read generally, as well as by the profession, the author has, by avoiding technical phraseology, and by giving explanations which would be superfluous to a tyro in medicine, done his best to make the subject so plain that every one who can read may understand.

RYE HOUSE, PUTNEY HILL, S.W.

# INFANTILE DISEASES,\*

ETC.

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THE object that I have in view in the following pages, is to prove, 1st, that at least 90 per cent. of infantile diseases arise from one cause—improper food; 2nd, that the poisonous agent is starch; 3rd. that the rejection of starch-food from infant dietary, and a strict adherence to natural food, are all that we require to ensure a rapid diminution of that excessive mortality, which is so great a blot on the medical skill and knowledge of the present day.

Let us first consider what a naturally-fed child is, and how few are the occasions on

\* *Vide* Preface for definition of an infant.

which we find it necessary to call in the doctor. A naturally-fed child is one which is kept entirely by the sustenance it draws from a healthy breast. All will admit that mother's milk is the very best food that an infant can take ; for not only does it contain every element requisite for the nourishment of the body, but it contains them in the most digestible form. When, therefore, we hear of "improved infant's food," it is impossible not to regard such attempts as the mistaken, though, perhaps, well-meant efforts of man to improve upon the work of an all-wise Providence. It is a remarkable fact that the food, which we find sent on purpose for, and so admirably adapted to the infant stomach, contains no starch ; though, had it been required, it could have been easily added to the secretion by the Creator. It seems, therefore, not unreasonable to infer that starch was excluded, because it would not answer the purpose intended. Admitting, therefore, that breast-milk is the best possible food for infants, it is clear that that which most nearly resembles that fluid is the next best. For practical pur-



poses the substitute must be one easily and universally obtainable ; and the only one that satisfies these conditions is cow's milk, which, when diluted with a little warm water, is as nearly as possible identical with breast-milk, both in its chemical composition and its perfect adaptability to the delicate infant stomach. In my own practice I should deem it a matter of indifference which was used, even from the very first day of existence. Children reared solely on either, or both of these, are the only naturally-fed ones ; nor do I remember ever to have been called in to attend such an one, except, perhaps, in the case of an accident ; certainly I never knew one to die at this stage from any of the ordinary infantile complaints.

I will take this opportunity of pointing out some of the mistakes committed, when the endeavour, often resulting in disappointment and failure, is made to rear a child by hand on cow's milk. The most common error is that of boiling the milk, or of adding the water too hot, both of which processes produce the same effect ; viz., of coagulating the albumen, and so

rendering it indigestible. Moreover, the easy transformation in the stomach of the casein and other constituents of the milk (which is necessary before it is able to be assimilated), is prevented. Another mistake is made by the addition of sugar, for while milk contains plenty in a digestible form, the sugar put in by human hands is not so digestible; the fluid should be milk and water, pure and simple. I need scarcely add that the milk must be about as warm as new milk, as well as fresh and good; and that great care must be taken to keep the feeding-bottle clean and free from the slightest curd. For the first three months the proportions ought to be half and half, after which to six months it may be increased to one-third water to two-thirds milk, and thence to the rest of the year gradually increased to one-quarter water to three-quarters milk, but never beyond this. With such a perfect, obvious, and rational substitute for breast-milk almost always at hand, it seems marvellous how we came to stray from the straight path into the crooked, tortuous, and unnatural way of starch-feeding; still more so, why we should

remain there, in these days of improved chemistry and improved physiology. It is very certain that until we do revert to natural infant-feeding, so long will the mortality maintain its present excessive high rate. "Milk is a secretion closely resembling blood, and containing all the proximate alimentary principles requisite to form a perfect species of food, deficient in nothing. It is sent as the food of all young mammals, when the digestive organs are most imperfectly developed, and their functions most feebly performed; but when, nevertheless, the processes of nutrition and growth are most active. Consequently milk is much more easily digested and assimilated than any other alimentary substance, *i. e.* much more easily and rapidly converted into healthy blood and tissue. It may be justly regarded as a natural device for the transference of the blood of the mother into the vascular system of its young—a kind of natural transfusion."\* Unfortunately, mothers entertain such strong prejudices on this subject, that it is frequently a matter of the greatest difficulty to induce them, when suckling, to try

\* Dr. Donkin.

the effect of cow's milk and water, instead of starch-food. The reluctance to make the experiment is owing, no doubt, in great measure to the popular delusion that two milks will not agree. There is, however, no reason, chemically, why they should not agree, and practically I am quite certain that they do.

Let us next examine what grounds there are for attributing such poisonous effects to starch. It is upon the starch they contain that all farinaceous foods depend for their nutritive qualities, and at a later period of life, most excellent foods they form; but we have seen already, that in the food sent by nature for infants there is no starch; it cannot, therefore, be essential. But I shall go further, and show that starch is not only non-essential, but that it is not digestible by the infant stomach. Starch is naturally insoluble, and to become soluble and made fit for absorption, it requires to be converted into a soluble substance called dextrin, and this conversion can only be effected by the starch becoming thoroughly triturated and thoroughly mixed with the saliva;

for saliva contains an active principle (ptyalin) which is the natural solvent of starch. But if we reflect upon the conditions of infancy, we shall see how impossible it is that the starch can either be ground up, or mixed with the saliva. For since the child has no teeth to act as flood-gates, much of the saliva runs out of the mouth; and inasmuch as he has no grinding teeth, the minute division of the granules is not effected, and, consequently, the extent of surface with which the saliva can come in contact is considerably diminished. The result is that the starch passes directly into the stomach, utterly untritured, and utterly unmixed with its natural solvent, and, therefore, in an insoluble and indigestible form. It is easy, then, to imagine how an insoluble mass like this, of boiled bread, gruel, arrowroot, baked flour, rice, biscuit, tops and bottoms, or any other food containing starch, passing through the stomach, and scraping and scratching along the delicate sensitive bowels, might readily produce nearly all the ills to which infantile flesh is heir. I trust I have now succeeded in making it clear

to my readers that (1) breast milk (or its prototype milk and water) is the only natural food ; (2) that it does not contain starch ; (3) that starch is physiologically indigestible, since owing to the peculiar conditions of infancy, it cannot become sufficiently mixed with its natural solvent, saliva. Upon the recognition of these three points as facts, depends any hope of improved treatment of infantile disorders, or any considerable reduction in the mortality, either preventive or curative. At present the prevailing ignorance on the subject is so great, that a mother of the period, even with an overflowing breast, does not think she is doing her duty to her offspring, unless she supplements the natural supply with some farinaceous compound, little dreaming that she is putting that into its stomach which is not only indigestible, but which ought to act, and in the majority of instances does act, as an irritant poison ; so much so, that if I wanted to rid the world of an infant, my object could be obtained as certainly and as fatally, if not as rapidly, by means of bread, gruel, &c., as if I had used arsenic for

my purpose. I have no doubt in my own mind that fifty years hence, the practice of bringing up infants on farinaceous food will be regarded as an insane and pernicious error, contrary alike to the dictates of nature and the principles of science.

There is one popular delusion with regard to starch, which should be noticed; and that is, that it is rendered more digestible by cooking. Now all that cooking effects is the bursting the sac of the granules of starch; but it cannot supply the absent solvent, saliva. When my attention was first directed to this subject, now some ten or twelve years ago, I was acting as resident-surgeon to a London dispensary, in a district where there were a great many poor Irish, whose custom it was to feed their infants on boiled bread, and very certainly there was no dearth of infantile diseases, although the starch must have been both baked and boiled. It may be argued that in poor neighbourhoods, such as the one to which I have alluded, it would be impossible for the badly-nourished mother to sustain the drain of a child for twelve

months ; and that it would be equally futile to order cow's milk, as that would be far too expensive. My answer is, that when it is once understood that actual life and death depend entirely upon the fact whether the child is able to get good milk or not, there will then be such an increased demand, and the supply will follow the demand in such abundance, that eventually it would at any rate not be dearer than bread. At present unfortunately there is but little demand, and consequently a comparatively small supply and great dearness.

I trust that my object has been obtained, of showing that all farinaceous foods are indigestible, and therefore deleterious. I now propose to show that, owing to the starch they contain, they act in the vast majority of instances as an irritant poison, which, but in too many cases, causes a fatal termination ; and if not fatal, often is accompanied by weeks and months of violent throes and agonies, caused by nature's efforts to eject and eliminate the unnatural diet, frequently bringing the little sufferer to the very brink of the grave. But



before proceeding to treat *seriatim* of the more common infantile diseases by the light of the foregoing principles, I should wish to point out generally a few of the transgressions against the principles here laid down, most ordinarily committed within the first twelve hours of the child's existence, and frequently causing fatal after-effects. There is a rule established, I suppose, by monthly nurses to enhance their own importance, that the breast does not, until three days after the confinement, contain any milk. Now, admitting that this may sometimes be the case, it is certain that instances to the contrary are equally numerous; for one of the ordinary signs of pregnancy is the enlargement of the breast, and the presence of milk, even at the sixth or seventh month; and it is not likely that at the end of the nine months the milk should vanish for those three mystic days. The consequence of this fallacy is, that the child gets a teacupful of gruel, or some other farinaceous food five or six times a day, in fact, is so kept for three days. Amongst the poorer classes it used to be, and still is the invariable

custom, directly the child is dressed for the first time, for the nurse to administer to it either some sugar, or a teaspoonful of gin; and if we reflect that the mucous membrane of the stomach of a new-born babe is highly vascular, and almost as sensitive as the same membrane covering the eye, we can form some slight notion of what the child's feelings must be after this teaspoonful of spirits has been poured into it; sugar being equally bad, as it soon turns into an acid. Yet, if a child of mine were compelled to submit to either of these inflictions, I should much prefer that it should undergo the short and sharp agony of the single dose of gin, than the three days' administration of the slower, but no less deadly gruel. Happy the man who has escaped at this period with only a dose of oil (although that is unnecessary); for if the child be father to the man, how many millions of dispositions must have been rendered, to say the least, less amiable from the fractiousness induced in infancy by the resentment of the stomach of the ill-usage to which it has been subjected in these early days; for, as is

the case with the eye, it will take weeks and months for the consequent excessive sensitiveness and irritability to subside, even under the most natural subsequent feeding; whilst, on the other hand, if kept up by the gin in single dose, and the starch food in repeated doses, incalculable mischief is produced. Let me earnestly urge, therefore, upon all mothers and nurses the vital importance of their putting nothing into the child's mouth but the nipple, which is Nature's bell-pull, by which it can make known its readiness for its first breakfast. Should there be no milk, no harm is done, but, on the contrary, good; for the suction of the child being the natural stimulus, the secretion will thereby be hastened, and, as far as the mother is concerned, it would benefit her, by its well-known power of promoting the contraction of the womb. If, after six or eight hours, there should still be no breast milk, a little warm milk and water may be given; and if the worst comes to the worst, and there should be no secretion, after steady perseverance with the child, until the third day, the same natural

substitute will answer every purpose, and the little one thrive and be happy, astonishing both mother and nurse by its goodness, and consequent saving to them of many wakeful nights ; for it is obvious that if a baby has nothing in its stomach of an irritant or foreign character, it will be altogether a better behaved one than if it were constantly suffering pain, or, at the least, uneasiness. Believe me, the smoothness and safety of the infant launch depends upon the management of the frail craft during these early hours.

In considering more in detail the usual fatal diseases of infancy, it will greatly simplify matters if we divide them into two groups ; the first containing those that show the effects of direct or local irritation, the second the effects of referred or distant irritation, as under :—

#### PART I.

Diseases the result of local or direct irritation—

- (1) Diarrhoea.
- (2) Inflammation of Stomach.
- (3) Inflammation of Bowels.
- (4) Infantile Consumption.
- (5) Marasmus or Atrophy.
- (6) Infantile Jaundice.

PART II.

Diseases depending upon referred or distant irritation—

- (1) Laryngismus Stridulus.  
Child Crowing—False Croup.
- (2) Bronchitis—Pneumonia.  
Bronchio-Pneumonia.
- (3) Convulsions.
- (4) Teething—Dentition.

Let us consider each of these individually, and we shall have no difficulty in tracing one and all to the same cause—viz., starch feeding. We will begin with the first on the list :—

1. DIARRHŒA.

*Symptoms.*—The diarrhœa of infants consists in vomiting and purging, with rapid emaciation and exhaustion, the peculiarity being that the stools contain quantities of mucus.

*Cause.*—Surely all the symptoms here enumerated are those of an irritant poison ; in fact, if we had to describe a case of slow poisoning by arsenic, the only additional symptom would be a burning sensation at the back of the throat : such being the case, where are we to look for the irritant ? Let us suppose,

as is frequently the case, that these symptoms come on before the child is a week old. It is not conceivable that it should be born with an irritant in its stomach, and we know that the mother's milk contains nothing to produce them ; it must be something else, therefore, which has been put into the child, and that something, in the vast majority of cases, will be found to be farinaceous food in some form or other, which, owing to the starch it contains, is, as we have before seen, indigestible by the delicate infant stomach. It acts, therefore, as a foreign body, and the symptoms are the evidences of Nature's strenuous efforts to throw it off : that which is in the stomach is ejected by the mouth ; that which succeeds in passing into the bowel is hurried and hustled along, and in order to shield the delicate surface of the bowel, copious supplies of mucus are poured out, so that the foreign particles may be exported as smoothly and with as little organic damage as possible ; hence the frequent and slimy stools. We see precisely the same principle in operation, in the copious discharge of this same

mucus from the nose, when getting rid of irritant particles of snuff. Owing to the irritation, the absorbing surface of the bowel is in a congested state, and when in that state cannot perform its function. Little or no nourishment, therefore, is taken up, and this, together with the drain upon the system, is, as it were, burning the candle at both ends, and fully accounts for the rapid emaciation.

## 2. INFLAMMATION OF STOMACH.

*Symptoms.*—Constant vomiting, great tenderness on pressure over the stomach, and feverishness.

*Cause.*—It is evident here that the stomach is making strenuous and valiant efforts to prevent the passage into the bowel of something which it finds itself unable to dissolve and convert into a useful, or even harmless material; it, therefore, steadily rejects it. We will suppose, for instance, that the child has been fed upon gruel. After each meal the stomach takes up nearly all the watery part of the food, and

what else it can dissolve and render acceptable to the bowel it allows to pass on ; but then it comes down upon a semi-fluid mass of a gritty nature, composed entirely of starch, of which it can make nothing, owing to the absence of its proper solvent, saliva. Sufficient spasm is then excited to make the stomach forcibly contract upon it and throw it out. If warning were taken by this proceeding, and the offence not repeated, no great harm would probably result ; but as in all attempts to bring up a child on farinaceous food, the same efforts would have to be repeated by a good watchful stomach six or seven times a day, can it be wondered at if the organ eventually becomes exceedingly irritable and inflamed ?

### 3. INFLAMMATION OF BOWELS.

*Symptoms.*—Pain on pressure over the abdomen ; the skin hot and dry, and general feverishness ; the legs drawn up upon the abdomen as far as possible, to relax the muscles and relieve pressure ; the stools slimy and often tinged



with blood. Common to all cases of bowel irritation are a grievous expression of face, and a peculiar miserable moaning cry, which are very characteristic; together with sudden starts and twitchings, breakings out of eruptions of herpes about the face, and numerous rashes and sores about the body.

*Cause.*—Notwithstanding the exertions and vigilance of the stomach, when the above symptoms occur, some of the indigestible starchy mass has succeeded in making its way into the bowel, and if the bowel do not at once resent its intrusion, and speed its parting, constituting diarrhœa, the mass passes on more slowly, setting up congestion on its way; and if the same cause be repeated frequently in the twenty-four hours, the congestion naturally would and does become active inflammation. The symptoms of these allied diseases are only explicable from the fact of some part of the alimentary canal containing some foreign or irritant material; if it be in the stomach, and that organ obstinately rejects it, it is called gastritis, or inflammation of the stomach; if it

pass into the bowels, and be by them ruthlessly thrown out, it is called diarrhœa ; if the bowels do not succeed in casting it forth harmlessly, by sufficiently coating it with mucus, or if the supply of the materies morbi at the mouth be persisted in, congestion and inflammation of the bowels are the natural result. It appears incredible that that which in itself contains no irritant, should be able to set up the effects of irritation ; therefore, for all practical purposes, it may be taken for granted that where any indications of irritation in any part of the alimentary canal exist, that infant has not been fed naturally, for there is positively nothing in good breast milk, or good cow's milk and water (the only natural foods), that could possibly produce them.

*Treatment.*—The proper method of proceeding in each of these three cases is,—first, to find out the error made in the diet and stop its administration ; second, to ensure the organs affected at least twelve hours' rest, by enjoining for that period a total abstinence from any kind of food. This abstinence is most important, although the

very opposite is the usual practice adopted by anxious mammas, and a child suffering from diarrhœa and vomiting is constantly plied with food, from a mistaken impression that they are going the best way to work to replace the loss occasioned by the drain upon the system, not knowing that, after irritation, an organ will reject even its most natural stimulus, as an eye that has been irritated by getting some sand or a fly into it will not endure its natural stimulus, light, without blinking and winking, until after a good night's rest. So the infant stomach will reject even mother's milk, unless time is given for the storm within to subside, and the resulting scum and foam, in the shape of viscid mucus, to pass away; even if retained, little, if any, would be taken up, all the absorbing surfaces being congested and coated with thick mucus. If the child appear sinking from exhaustion, the tendency to death must be obviated at all hazards, and small quantities of milk and water, with a little brandy or ammonia, must be given frequently. These two principles fairly carried out would be all the treatment absolutely neces-

sary in most cases, and if the child reverts to natural food it does well; but in some cases the diarrhœa is so excessive that it may require moderating by means of small doses of chalk mixture. In every case great benefit will arise from the administration of soda, or some other alkali, for the secretions are invariably of an acrid or an acid nature, and by neutralising these, soda seems to produce great benefit and ease; and a species of cold lotion, as follows, is generally useful:—

R. Soda Bicarb., ʒss.  
Spir. Eth. Nit., ʒj.  
Liq. Ammon. Acet., ʒss.  
Vin. Ipecac., ʒj.

Aq. ad ʒiij.; ft. mist. A teaspoonful to be taken every three or four hours.

Anything that would tend to relieve the congested state of the bowels would be of use in these cases, such as warm baths, if exhaustion has not proceeded too far; large warm poultices, bread or linseed, mixed with a little mustard, laid over the abdomen, which act favourably by driving the blood to the skin;

the small doses of ipecacuanha also act as diaphoretics, *i.e.*, tend to produce perspiration, and thereby relieve the bowels. (If there is vomiting, the ipecacuanha may be omitted.) An occasional dose of grey powder is also to be recommended, for similar reasons ; for as all the blood from the bowels has to pass through the liver on its way back to the heart, it is clear that unless this turnpike-gate, so to call it, be kept perfectly free and open, the block-up behind would be more excessive and unmanageable. If the vomiting be very obstinate, warm milk and water, in very small quantities, may be injected into the rectum frequently, in the hope that some part may be retained and absorbed.

Every work that I have read on this subject invariably recommends arrowroot, baked flour, rice-water, barley-water, or some other starchy compound, to be given in infantile diarrhoea ; but as we have seen that starch is, in the great majority of cases, the cause, the practice must be heaping fuel on the fire, as the bowels already contain more starch than they want.

## 4. INFANTILE CONSUMPTION.—TUBES

## MESENTERICA.

*Symptoms.*—This complaint is characterized by a general wasting of the body; the stools frequent, white, and containing matter; the abdomen distended, hard, and nodulated; the child gradually sinking from hectic and exhaustion.

*Cause.*—As all the glands in every part of the body may and often do become sympathetically affected, when the surfaces with which they are connected are suffering from any irritation, so it is with the glands of the mesentery in connection with the bowels. It is easy, therefore, to imagine that where there is a strumous tendency, the irritation extending to these glands might, and probably would, light up latent disease in them, thus producing this most fatal malady.

*Treatment.*—There is, unfortunately, no cure when once the malady is in activity, and the treatment is therefore generally very unsatisfactory. The principle to be kept in view is

to avoid the entrance into the bowels of anything that can possibly irritate them; and thus give time for the original excitement in the bowels to subside, in the hope that the secondary effects in the glands may thereby become abated, precisely as, in an adult, we extract a carious tooth, to save an abscess in the glands of the neck. But remember, inasmuch as prevention is better than cure, that thousands and thousands of these cases would never have happened, at any rate during their first year, if the infants had been fed on natural food, and that alone.

#### 5. MARASMUS—ATROPHY.

*Symptoms.*—Like the disease last noticed, and for which it is often mistaken, marasmus is evidenced by slow but steady emaciation. There is, however, no hardness or distension, no lumpy feeling of the bowels; on the contrary, the sinking in of the abdomen is sometimes very remarkable; the stools, though showing a disordered condition, being white, slimy, and

sometimes bloody, often containing undigested food, never pus; there is no hectic, and in fatal cases the child dies purely from slow starvation, without any symptoms of organic disease.

*Cause.*—The cause is identical with that of infantile consumption, except that it is acting on a non-scorfulous subject. Let us take a typical case, and we shall find the order of events is this: you are present at the birth of a fine healthy child, which a month or two afterwards is brought to you merely a bag of skin and bones; it is clear under these circumstances, that one of two things must have occurred (omitting, of course, cases in which the child has been starved intentionally)—either food of an indigestible character must have been given, or the stomach and bowels, of a child whom you know to have been born healthy, must have, suddenly and without any cause, given up their function and refused to digest and take up the mother's milk put into them. This latter hypothesis is not at all probable, and it will invariably be found on inquiry that the former is the right one. The mother began with feed-



ing the baby once or twice a day with baked flour or boiled bread, say : this produced just enough irritation to congest the bowels and absorbent glands, not enough to bring on active inflammation, but any organ in a state of congestion cannot properly perform its function ; the food therefore passes on undigested and unabsorbed, and the child begins to fall away. The mother, not dreaming that this is owing to the baked flour, &c., imagines it must arise from her milk not agreeing with her child ; the breast is in consequence taken away, and more and more starchy material poured in ; less and less nutriment is carried into the blood, all the stored-up fat becomes used up, and the child reduced to a skeleton. If the cause be allowed to continue, the child eventually dies, absolutely starved, although it may have taken daily up to the time of its death, considerable quantities of farinaceous food.

*Treatment.*—I am happy to be able to say that the treatment in these cases, if the child be not too far gone, is nearly always most satisfactory, and the pleasing transformation which

takes place, in the course of a few weeks, of a little weazened, dried up, miserable old-man-looking child, into a plump, cheerful little cherub, is so astonishing, that its mother, if she had not seen it in the interval, would scarcely recognise her own offspring ; the only harlequin's wand required being the total cessation of a starch diet and the return to a natural food, either good breast milk or warm milk and water in small quantities administered frequently. There is one practical point which I will mention, and it is this : in all cases of starvation, death takes place at last from cold, or rather from want of animal heat. If the blood gets below a certain temperature, the necessary interchange of oxygen and carbonic acid cannot go on in the lungs, the blood therefore stagnates in the small vessels surrounding the air cells, congestion of the lungs follows, and the blood not getting purified from its carbonic acid, the child dies from asphyxia, as pure, though slower in its effects, as if it had been hung by the neck. It is exceedingly necessary, therefore, to take care that the child is kept warm, for a

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very slight gust of cold will easily extinguish for ever the already flickering flame. It ought always to be cuddled up warmly in flannel, its wet napkins frequently changed; it should never sleep on water-proof sheeting, or by itself at night, but in the same bed with some one, to impart to it some of this vital animal heat. No class of cases could more clearly prove the truth of my views, and at the same time they show the wonderful resilience or elasticity of the vital powers inherent in infants; for, when the corroding rust and dust have been removed from the main-spring, and only Nature's lubrication used, the child seems to rebound from the verge of the grave into vigorous healthful life.

#### 6. INFANTILE JAUNDICE.

*Symptoms.*—This complaint is easily recognised by the yellow colour of the skin and conjunctiva, white stools, accompanied with great drowsiness, which sometimes proves fatal, from

the sedative poisoning effect of the excess of bile in the blood.

*Cause.*—When jaundice comes on after birth, it may generally be taken as a sure indication that improper food has been given. The passage of the bile into the duodenum has been arrested, either through the opening of the duct becoming blocked up by viscid mucus, or else by tumefaction of the mucous lining of the duct, which is continuous with that of the duodenum. Now, both these causes are the natural result of some irritant passing along the bowels; but, if the child had been naturally fed, no such irritant could have passed. We have all experienced the difficulty at times of blowing even air through one nostril, if we close the other, when the mucous membrane of the nose is tumefied, although the calibre of either of the nares is at least ten times as great as the duct through which the bile has to find its way, and that without any muscular propelling force, whereas upon the nares the whole vis of a strong expiratory effort may be concentrated. Judging by comparison, therefore, a small

amount of tumefaction would suffice to imprison the bile.

*Treatment.*—It follows from the above that our efforts must be directed towards preventing the passage of any mechanical irritant, in the shape of undigested food, along the duodenum. This can only be insured by restricting the child to the breast or milk and water, which, together with a brisk purge to clear off the viscid mucus, is all the treatment necessary; and this will be followed by a complete recovery in a few days. But, on the other hand, if the undigested starch in the food, or whatever it may be, passing, be not recognised as the cause, and its administration prevented, the jaundice, in spite of any medicinal treatment, will long continue, and in many cases have a fatal ending.

## PART II.

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### DISEASES DEPENDING UPON REFERRED OR DISTANT IRRITATION.

It will be necessary, for the purpose of explaining and rendering perfectly intelligible the phenomena exhibited by diseases of the respiratory organs, to call to our aid a little anatomy and physiology. It must be borne in mind that there exists a large nerve called the "pneumogastric," which passes from the base of the skull, by each side of the neck, down through the cavity of the chest, to the stomach, giving branches on its way to the larynx, trachea, bronchial tubes, and lungs—to all the organs, in fact, of respiration. It also supplies the heart, and is in frequent and intimate connection with the sympathetic in many parts of its course, and terminates eventually by being dis-

tributed—the one on the left side to the anterior surface of the stomach, the other on the right to the posterior surface. Thus we see the whole respiratory tract is brought into immediate nervous relation with the stomach, both being supplied by one and the same nerve, and that nerve one of mixed function, being both motor and sensitive. We shall find, by-and-by, that this relationship is no mere coincidence, but that it plays a most important part in the production of nearly all the symptoms of those affections of the respiratory organs we are about to consider, which symptoms it is impossible rightly to interpret, or to treat satisfactorily, unless this close communion between the stomach and respiratory organs, by means of the pneumogastric, be kept constantly in remembrance.

Now, physiology teaches us that if an irritant be applied to one part of a nerve, the effect, be it muscular contraction or increased secretion, may, and frequently does, become referred to a distant part of the same nerve, or even to another nerve. This principle is called reflex

action, and until its discovery by Dr. Marshall Hall, it must have been impossible to comprehend the real significance of many of the symptoms exhibited in diseases of the respiratory organs. To give a familiar instance of this reflex action : if the back of the throat be tickled with a feather or a finger, the impression is referred to the stomach and stimulates it to contract spasmodically, and an effort of vomiting is the result. Again, when a small particle of dust is inhaled and becomes lodged in one of the small bronchial tubes, it there irritates a filament of the pneumogastric, when immediately other parts of the nerve become stimulated, and a spasmodic expiratory effort is induced, commonly called a cough. If, therefore, a terminal filament of the pneumogastric in the lungs, becoming irritated, will produce cough, it is equally certain that a filament of the same nerve, becoming irritated in the stomach, may and does produce cough.

I am very anxious to impress these important points upon my readers, and I hope I have succeeded in making my meaning clear, for unless



it be remembered that the stomach and lungs derive their nervous influence from the same source, and unless it be remembered that, by reflex action, anything irritating the pneumogastric in the stomach may set up serious effects, and give rise to grave phenomena in different and distant parts of the same nerve, it would be impossible to give a rational explanation of the important diseases which we will now proceed to examine.

1. LARYNGISMUS STRIDULUS. — CHILD-CROWING.

FALSE CROUP.

*Symptoms.*—This complaint arises from a spasmodic closure of the upper part of the wind-pipe called the glottis. According as more or less of the aperture is open or closed, so will vary the intensity of the symptoms; from, in mild cases, merely a slight laryngeal breathing, with a hard, metallic-sounding cough, where the glottis is slightly rigid and contracted, to complete obliteration of the opening in bad cases, and rapid suffocation.

Usually, the attacks of dyspnœa come on in paroxysms; when, owing to the inability to inspire, the child's face becomes of a livid hue and swollen, the eyes project from the orbits, the head and spine are extended, till at length the spasm relaxes a little, and a long inspiration follows, accompanied with a loud crowing sound. There is always some disarrangement of the stomach or bowels, and generally undigested food in the motions. When the spasm lasts more than two or three minutes, the child dies, and its violent struggles for breath give somewhat the appearance of convulsions, and it is doubtless from this disease that most of those numerous sudden deaths take place popularly called fits. False croup resembles very closely the genuine disease; so closely, indeed, that it is often mistaken for it, and I really know of no certain distinction, except the discovery of actual false membrane having formed. This is of the less consequence, as the treatment of both would be identical.

*Cause.*—Spasm may be defined as an irregular and involuntary contraction of muscle; but

muscular fibre cannot contract unless some stimulus be applied to it by means of the nerves. What we have to find out, then, is where, in this disease, resides the original excitant of the nervous irritation which produces the morbid contraction of the muscles about the larynx.

When strong poisonous gases are inhaled, such as chlorine or sulphurous acid, the impression is conveyed direct to the nerves of the larynx, and the muscles instantly close the opening, to prevent the admission of these noxious vapours into the lungs. But in laryngismus there is no evidence of any direct irritation; we must therefore look abroad to discover the seat of the indirect or distant irritant; this I shall be able to show, beyond doubt, may be traced to the filaments of the pneumogastric covering the stomach, and produced by the morbid action of undigested food.

The symptoms have sometimes been attributed to enlargement of the thymus or other glands pressing upon the recurrent laryngeal nerve; but pressure would involve paralysis of

the muscles supplied by the nerve, and if this were the cause of the dyspnœa, the paralysis would not come and go, making the attacks paroxysmal as spasm does, for if the muscles of the larynx were paralyzed, the difficulty of breathing would be permanent during such paralysis. If the infant happen to be developing any of its teeth, to this cause is attributed this and every other disease; but, as we shall see when we come to the subject of teething, difficult dentition itself is only one of the surest signs of bad feeding; and diseases ascribed to it occur when the gums are perfectly natural, and frequently before the teeth are near the surface—viz., before the sixth month. That popular prejudices should exist utterly at variance with facts is not to be wondered at; but it is remarkable, to say the least, that medical men, to whom the relations of the parts must be familiar, should invariably prefer referring the exciting cause of laryngismus to dentition rather than to the stomach; for, at the worst, a growing tooth can only press upon an infinitesimal portion of a nerve (the trifacial), comparatively

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totally distinct from the pneumogastric, whereas in the stomach there are several square inches of surface constantly exposed to irritation supplied by part of the pneumogastric itself. There appears no more reason why the irritation of a growing tooth should cause spasmodic closure of the larynx than that it should cause spasmodic closure of the eyelids, for it has just as much nervous relation with one as the other ; but, even supposing it did affect the larynx, difficult dentition, as I have said before, is, in its turn, caused by bad feeding.

There is, therefore, no other rational explanation of the cause of the spasm in these cases than that it is due to irritation of the pneumogastric in the stomach, and an all-sufficient cause this is ; fortunately, the diet of the infant being so entirely under our control, an easily avoidable cause.

In practice one may often see the proof, that this is the right reading of the symptoms, clearly exemplified, for in the child's vomit will nearly always be found undigested lumps of food, and immediate relief of the urgent dyspnœa will

follow their expulsion. Amongst my old dispensary patients, these cases were very common, and I usually found that the infants lived upon the same diet their very poor parents did, that is to say, upon suet pudding and potatoes, the pudding none of the lightest, and both frequently eaten cold; and I have seen pieces of potato ejected, unmasticated, and sometimes with parts of the skin remaining on, as large as a bean. It is easy to imagine how such an obvious irritant as this, acting on the delicate vascular stomach of a child not twelve months old, must throw the whole pneumogastric into a state of vibration. But we find the identical symptoms occurring in the infants of the better classes; and how is it to be accounted for here? I will undertake to say, that it will invariably be found, upon inquiry, that some error in diet is being committed, by far the most frequent being the administration of farinaceous food in some shape or other; and be it the more expensive tops and bottoms, or the more common arrowroot, boiled bread, gruel, or ground rice, we shall find at the bottom of each and all our

old friend, or rather, our old enemy, starch, undigested, doing, in a perhaps more insidious, but no less effectual manner, for the pneumo-gastrics of the rich, what the cold potato does for the infants of the poor.

*Treatment.*—If the attack come on suddenly, an emetic should be given at once, a teaspoonful of antimony wine every ten minutes, until the stomach be thoroughly emptied, and the child put into a warm bath. But if it be evidently suffocating and cannot swallow, laryngotomy must be resorted to. When the stomach has been emptied, and the exciting cause probably removed, the after-treatment is most important, and consists, not only in the avoidance of putting anything indigestible into the stomach, but of giving that organ at least twenty-four hours' rest, to allow time for the vibration of the pneumogastric to subside. Cold water, an occasional dose of the cooling mixture (p. 26) before mentioned, and a little grey powder and soda every three or four hours, is all that it is desirable to put into the stomach at first, for even mother's milk will not be digested, and

may bring on a recurrence of the spasm. After twenty-four hours, however, a small quantity of mother's milk, or well-diluted cow's milk, may be tried, and repeated at intervals, the effect being carefully watched. But if these increase the dyspnœa, it will be best to discontinue feeding, and prolong the rest to the stomach for some days, by sustaining the infant with injections of milk and water per rectum. The grey powder keeps the liver free, and by preventing venous congestion (the blood from the stomach having to return through the liver), thereby acts as a stomach sedative. The warm bath may be repeated frequently, for besides being a good general antispasmodic remedy, by deriving the blood to the skin, it in these cases tends to relieve the increased vascularity of the mucous coat of the stomach, the result of the recent irritation. For the same reason a large bread and mustard poultice may be advantageously applied over the epigastrium. Warning should always be taken whenever an infant's breathing becomes at all crowing in its character, or the cough dry and metallic in



sound, as this is one of the first and most common indications that the pneumogastric is getting irritable, owing to the food not digesting. It tells us that the upper part of the wind-pipe is more rigid and contracted than it should be; as it is owing to the air having to pass through a stiffer and narrower tube than natural, that this peculiar noise arises. If such warning be neglected, and the cause continued, the probable result will be, sooner or later, a sudden paroxysm of increased spasm, and almost instantaneous death.

It cannot fail to be observed that if the cause of spasm of the larynx—which may show itself, in all gradations, from slight laryngeal breathing up to suffocation in a few minutes, without warning—be due to irritation of the pneumogastric in the stomach, it follows that such attacks could not occur in naturally-fed infants, as there is nothing in good breast milk or milk and water which could possibly irritate that nerve.

It also follows that the only safe plan to adopt after recovery, in order to avoid a repetition of

an attack of this fearful complaint, is to ensure that the child, during the remainder of its infancy, be kept strictly to a natural diet.

## 2. BRONCHITIS AND PNEUMONIA — BRONCHIO-PNEUMONIA.

*Symptoms.*—It will be convenient to consider these two diseases together, for, although in the adult the difference between them is frequently well marked, it is not so in infancy, as the symptoms usually show a mixture of the two, the pneumonia generally being the result of the bronchitis. The irritation and the inflammation beginning in the larger air tubes, passes along them to the smaller bronchi, and at length involves the lung tissue ; or, as is more common, owing to the minute tubes becoming clogged with thick mucus, air is prevented from entering some of the pulmonary cells, and the blood consequently stagnates around them, producing congestion of the lungs, or the first stage of pneumonia.

The symptoms commence with slight wheezey breathing and short tickling cough, accompanied with pain on pressure over the stomach, and more or less signs of fever, as hot skin, flushed face, &c. ; gradually the respiration gets more oppressed and hurried ; the air can be distinctly heard passing through tubes filled with mucus, by the loud crackling sound it makes ; the cough gets more incessant, and immense quantities of mucus are thrown up into the throat and swallowed ; the air becomes less and less able to reach the more distant cells ; the blood, therefore, not being able to discharge its carbonic acid, refuses to pass on, causing pneumonia ; the lips, face, and even tongue get almost black ; the circulation through the brain is interfered with ; evidences of congestion supervene, till, at last, coma or convulsions close the painful scene.

*Cause.*—It would appear a paradox to assert that bronchitis is, in its origin and intent, curative, but such most certainly is the case, and it is only from too frequently abusing its

preservative efforts that it becomes transformed into a formidable disease.

The order of events clearly illustrating this fact is as follows :—The stomach receives into it something which it cannot dissolve or digest, the gastric filaments of the pneumogastric become irritated, and by reflex action the irritation is communicated to the bronchial tubes ; increased secretion of mucus is excited in these, which, after being coughed up into the throat, is passed down into the stomach ; this mucus completely coats every particle of the undigested something, and floats it safely through the pylorus, and through the whole length of the bowels. If it were not for this supply of mucus from the bronchial tubes, and the undigested matter were allowed to pass on uncoated, the result would probably be either convulsions or inflammation of the intestines. We see, therefore, that bronchitis is in its origin preservative, its object being to assist in ridding the *primæ viæ* of that which would, but for this assistance, prove most hurtful. But if the cause of irritation be too frequently repeated

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(as in bad feeding it would be several times a day), the bronchial tubes would soon become actively inflamed, and being so filled with thick mucus that the blood cannot get sufficiently aërated, the lungs become congested, and we quickly have all the symptoms of a severe and dangerous case of bronchio-pneumonia before us.

It has happened to me more than once to have been present when all these symptoms were in activity, to see the cause thrown out, covered with viscid mucus, during an attack of vomiting—sometimes it has been the core of an apple, sometimes orange-pips, and in one instance I remember egg-shell—with instantaneous relief to the little sufferers. These were, of course, older children than those that come under our definition of an infant, but the same principle holds good, as showing the cause of bronchitis; and the point I wish to urge is, that farinaceous food, owing to the undigestibility of starch before a child has powers of mastication, may and does excite in infants the same diseases which obvious irritants, like those just mentioned, produce in

children of two or three years of age. So perfectly convinced am I of the truth of this, that I would confidently undertake to rear five hundred or five thousand children, in any climate, without having a fatal case of bronchitis during the first year of existence, unless tubercle were the exciting cause, and even then I doubt if it would become active in a properly-fed infant; at any rate, it is certain that if improper diet can produce bronchitis, it is well calculated to light up latent tubercle. After one year, when the child begins to run about, and puts everything it picks up into its mouth, the cause is less easy to be avoided.

Bronchitis has been generally attributed to teething or cold. The former we may dismiss at once, as itself a symptom of bad feeding; the latter no doubt exercises an important influence if the digestive organs are previously out of order, but not otherwise, except in extreme cases, as partial drowning, or long exposure to intense cold. But we must all have had personal experience, that we may sometimes get wet through, or exposed to any amount of

variation of temperature with impunity, whilst at other times any slight draught or dampness will induce severe catarrh. There must be therefore some particular state of the body, rendering it at times amenable to the influence of cold, and when such is the case we always find our stomachs deranged.

As a further confirmation of the fact, that irritation of the gastric part of the pneumo-gastric is the grand cause of bronchitis, I may instance the otherwise inexplicable coincidence, that this disease is most common in infancy and old age, for in what particular does "the last stage of all" resemble infancy unless it be that they are both "*sans* teeth?" Being without teeth means imperfect mastication, and the old man well knows that if he eats things which require much biting, such as nuts, pastry, celery, cheese, &c., his cough and expectoration will be increased; but these things do not pass down into his bronchial tubes, neither do they give off any irritating essence to be carried by the blood to the lungs; the reason, therefore, why his cough, &c.—his

bronchitis, in fact,—is increased by them must be from the mechanical irritation they excite in the stomach. Through imperfect mastication, offending bodies succeed in passing the keep undetected, and invade the citadel, when the stomach, finding itself unable to defend its walls unaided, sends an alarm by the pneumogastric to the lungs, which instantly come to the rescue, and pour down relay upon relay of thick mucus, which immediately seizes upon, takes into close custody, and renders perfectly harmless, the unwelcome visitors, which are then carried through a long, narrow, and winding passage, until they are ultimately ejected at the postern gate.

In old age and infancy, then, the cause is the same, for (to put it as an equation) as nuts, cheese, pastry, &c., are to the callous pneumogastrics of the elderly, so is the residuum of undigested starch after a farinaceous meal to the highly-sensitive pneumogastrics of infants.

There is another way in which pneumonia may arise from bad feeding, independently of

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bronchitis, and that is, when the serous covering of the stomach or bowels, sympathising with the irritation of the mucous coat, becomes so excessively sensitive and painful on pressure that the diaphragm cannot descend, the breathing being therefore carried on by the chest only, and the whole of the lungs not getting expanded, the more distant lobules become congested and œdematous, precisely as they are found to be after death from acute peritonitis.

*Treatment.*—Here, as in all the other diseases we have been considering, diet, as it is the cause, is also the all-important means of cure. To attempt to treat bronchio-pneumonia without attending to the diet, would be like giving chalk, sulphuric acid, or any other astringent in a case of autumn diarrhoea, and at the same time keeping the patient on rotten plums; or, like giving an alderman alkalis and colchicum for an attack of gout, and allowing him two bottles of fruity port a day. Many cases of bronchitis in infancy will get rapidly well, with no other treatment than a return to natural food, whilst thousands will

die, whatever medicine may be given, if non-natural food be persevered in. Our object should therefore be, first, to get rid of the irritating material as quickly as we safely can, and then to quiet the irritated surfaces. If the case be recent and has come on suddenly, there is a fair chance that the cause may still be in the stomach; an emetic of *vin. ipecac.* or *vin. ant. tart.* may then be given; but if otherwise, and the cause has passed into the bowels, an emetic does more harm than good, by increasing the dyspnœa and the chances of congestion of the brain, and by reducing the vital powers. It is better, therefore, if the case has lasted more than twenty-four hours, to urge the offending matter gently along, by means of a teaspoonful of castor oil, repeated after three or four hours. When we have succeeded in removing the cause, the means employed to allay the resulting irritation must be similar to those recommended in laryngismus—a good long interval without food of any kind to insure perfect rest; warm baths and bread and mustard poultices to derive to the skin; small

repeated doses of grey powder to keep the return circulation through the liver free; an occasional dose of the cooling mixture (p. 26); and then, most important of all, the future avoidance of starch food, which in infants will nearly always be found to be the cause, and strict adherence for the future to either good breast milk or milk and water alone.

### 3. CONVULSIONS.

As an attack of convulsions consists in a series of violent involuntary spasmodic contractions of the voluntary muscles, and as such muscles cannot contract unless they receive a stimulus from some part of the nervous system, it follows that convulsions are purely symptomatic, and that they positively indicate that some part of the brain or spinal cord (centrally), or, as is most common, some nerve or nerves leading to either of the nervous centres (eccentrally) is being subjected to some abnormal irritation. This being the fact, a very few words will suffice to point out how

incontestably a case of convulsions, occurring in a child under one year, bears out my argument, that nearly all the fatal diseases of infancy are due to bad feeding, and are therefore preventible.

The two grand causes of convulsions are said to be teething and worms. Now, teething, if it were not for the respectability prejudices acquire by age, would be scarcely worth arguing about; for surely in the alimentary canal, from the œsophagus to the rectum, we have several feet of surface, supplied by nerves coming direct from the spine, constantly exposed to the irritation of passing ingesta, whilst in the gums the surface supplied by the trifacial might be measured in lines; the simple chances of being sites for irritation would therefore at the least be in the ratio, *ceteris paribus*, of the extent of surface exposed; but other things are not equal, for teething being a normal process, it is utterly unlikely to be the deadly child-trap it has been for so many ages represented to be. We now for certain that irritation of the spinal

nerves supplying the bowels will excite convulsions, as is daily seen, even in adults suffering from worms; but we do not know that irritation of the trifacial accompanying teething will do so, for difficult dentition never occurs in a naturally fed child, and bad feeding being the cause of one, is most likely the cause also of the other. In these days it would be as impossible for such an irrational prejudice as that of teething being the great cause of convulsions to be originated now, as it would be for any one to try and prove that some distant star of small magnitude was the source of light and heat upon the earth.

If a worm will excite sufficient irritation in the spinal nerves going to the intestines of the adult to produce an attack of convulsions, how much more possible and probable it is for the undigested starch to excite the same nerves in the sensitive bowels of the infant; for a worm is a comparatively soft, smooth, and inoffensive substance as compared with the gritty, semi-solid residuum of a farinaceous meal.

As to worms as an exciting cause of con-

vulsions, all I need remark is, that they do not infest children kept to the breast, that is to say, those that are naturally fed ; they would not, therefore, attack those fed on milk and water ; besides, they require thick mucus for their nidus and feeding ground, and there is nothing in such diet that could possibly excite such secretion for them to thrive in. Convulsions in infants, therefore, except in those rare instances of congenital hydrocephalus, or strumous disease of the brain, could never happen in properly fed children. If the real cause be bad feeding and not teething, we see that whereas the latter is inevitable, the former is not, but, on the contrary, most easily preventable. All that seething mass of mortality reported in the Registrar-General's columns as "Teething and Convulsions," represents simply so many thousands of wasted infant lives, wasted because their deaths might have been so easily averted, if the avoidable bad feeding had been looked to as the real source of peripheric irritation instead of the unavoidable teething.

The interference with the return of the

blood from the brain, during an attack of laryngismus, is well calculated to set in action hydrocephalus, or tubercle in strumous children, which central causes of convulsions, but for such attacks, would in many cases have remained quiescent during the first year, when the diet is so completely under our control.

When considering laryngismus, it was mentioned that the struggles, which the child makes in its efforts to get air to pass through the constricted larynx, are frequently registered as convulsions. We saw that laryngismus was also a consequence of bad feeding; so, therefore, would this form of convulsions be equally preventable with that arising from irritation of the spinal nerves in the bowels.

#### 4. TEETHING—DENTITION.

*Symptoms.*—The only symptom, pure and simple, of teething, is a swollen, tender, and sometimes ulcerated state of the gums, although many other and fatal consequences are attributed to it; in fact, every complaint which we have

been considering is laid to its door, if such happen to occur simultaneously with the development of the teeth, but, as we shall see, most unjustly so.


*Cause.*—Teething has been purposely reserved to the last with the object of showing that every disease which is ordinarily supposed to be due to it, may and frequently does occur from another cause, long before the teeth are in active development, and when the gums are perfectly cool and natural; therefore, I may be allowed to ask, if we have identical symptoms of a disease at a month old, when dentition can clearly have nothing to do with them, why should precisely the same symptoms, at or after the sixth or seventh month, be attributed to this cause? There can be no valid reply to this argument; and I fearlessly assert, then, that there never is, nor ever has been since the world began, any such disease as teething, and that whenever symptoms usually supposed to be caused by it are met with, it may be taken as an axiom that that child has been improperly fed, and that such improper food will, in ninety-



nine cases out of a hundred, be found to contain starch, which, as we have seen before, has the power to produce them all. No child kept on breast milk or on milk and water ever presents such symptoms.

It has appeared to me for many years a gross libel on the fair fame of Nature, to imply that she has made such an egregious blunder in one of her most ordinary processes, as to require the annual sacrifice of a hecatomb of infants for its accomplishment. Anyone at all acquainted with physiology must have been struck with awe and admiration, in observing how invariably the best means are adapted to every end. Is it likely, then, that this should be the one grand, sole, and fearfully fatal exception? Surely this is not, cannot be so. It is clearly a case of mistaken identity. Let us, therefore, at once honourably acquit Nature of this odious charge of destroying her own offspring, and let us now and for ever discharge teething from our list of diseases, and let it be transferred to its proper place, the witness-box, as an evidence, and a trumpet-tongued one, of

the evils engendered by starch feeding. Having detected the real culprit, we will now examine the vastly improved position we are thereby placed in with regard to the mortality; for although it is ordained that all must cut their teeth, it is *not* ordained that all should be fed on starch, quite the contrary. Those deaths, therefore, which have been supposed hitherto to be owing to a cause *inevitable*, are in reality due to a cause very *evitable*, and such deaths are, in fact, entirely avoidable. We may, therefore, indulge a well-grounded expectation that as these simple truths become generally known and acted upon, the mortality from this supposed inevitable cause will gradually cease; and that thousands and thousands of infants yet unborn, whose deaths would be attributed to that which is a mere symptom of the real and avoidable cause, will live, let us hope, in many cases, to be a blessing to their parents, and in some few a blessing to their kind. The whole question of infant mortality turns upon this point, for there is scarcely a disease which is not attributed to teething, if it happens to arise coincidentally



with their development. As long, therefore, as we treat the symptom, without looking beyond for the cause—as long as we fight the shadow and not the substance—so long shall we be pursuing a Will-o'-the-wisp without observing the morass below, and so long will thousands of infants be swallowed up in the dismal swamp of death.

This much may be admitted with regard to teething, that it may indirectly increase the evil effects of bad feeding, for in an improperly fed child the gums are frequently swollen and tender; the result is that the bread and butter, biscuit, or whatever it happens to be, gets less mumbled about in the mouth—that is, less mixed with the saliva—and down go angular, jagged pieces into the stomach, there to set up the ills before described, owing to the starch contained in such pieces not being commingled with its natural solvent, saliva, in sufficient quantity to render it soluble and digestible. I have frequently seen mischief arise in this manner from the common practice amongst mothers and nurses of giving children crusts to

bite, with a view of assisting (?) the cutting of the teeth.

Much of the popular horror and dread of this period of infancy, which has raised the natural process of dentition into such a fearful bugbear, is owing to the use of the term "cutting;" it is by no means a happy expression, since it is calculated to convey an erroneous impression, for no actual cutting at all takes place, but simply a gradual, slow absorption of the gums from the pressure of the growing tooth, precisely as in a chronic abscess the skin and all the intervening structures become gradually absorbed, until the matter ultimately makes its way to the surface.

I trust I have succeeded in making this part of my subject clear, as it is the very key-stone of the arch over which I hope many infants will pass out of the valley and shadow of death. To make doubly sure, I will summarise the points I wish to express, viz.: that there is no such disease as teething, because we see the same maladies when dentition, from the age of the infant and the perfectly natural

state of the gums, can confessedly have nothing to do with them ; because we do not see any such symptoms in children kept entirely on natural food ; because it is in the highest degree improbable that Nature should have made so great a blunder ; and because, as we have seen before, all the symptoms can be and are produced by starch, including the only actual evidence of difficult dentition, an inflamed state of the gums.

It will be difficult for many medical men to believe that the enemy they have been strenuously fighting all their lives is merely a dummy, behind which the real foe, who has so often worsted them, lay concealed and unsuspected.

At present, if a child die of convulsions, diarrhœa, or what not, after it has attained the age of six months, even if the gums be cool and comfortable, the case is usually certified as one of teething and convulsions, teething and diarrhœa, &c., because it is satisfactory to the practitioner to believe, after his efforts to save have proved unavailing, that he has been beaten by the inevitable ; it is also satisfactory,

or at any rate some consolation to the parents in their affliction, to believe that their loss is owing to the inevitable; the case goes to the Registrar-General as teething and convulsions, &c. But when, as must and will happen before excessive infant mortality will be stayed, all these cases are recognised to be, and certified as being, starch feeding and convulsions, starch feeding and diarrhœa, &c., then will parents' eyes be opened to the real cause, then will the Registrar's report contain fact instead of fiction, then shall we escape from the long dark tunnel we have been in so many years, into the broad light of day, then will dawn a bright era for future infants, and then will gradually but surely dissolve the icy mountain of mortality in the bright rays of the sun of truth.

*Treatment.*—The object to be kept steadily in view must be to get rid, out of the alimentary canal, of the cause, and soon after this is effected all swelling and tenderness of gums will subside. Should, however, a fit be imminent, no great harm will be done by lancing the gums, but do not trust to that alone, but

administer as well a brisk purgative (a grain or two of calomel shaken on the tongue) ; and if the child recover, do not give the credit, I pray, to the lancing, for by so doing it would tend to perpetuate the very popular but impious delusion, that Nature, who does all other things well, is, in this process alone, a monstrous infanticide.

#### CONCLUSION.

There are two or three general observations that I ought to make, in order to render my subject a little more complete.

I have confined my observations strictly to children under one year, as that is the period when the excessive mortality takes place ; but there is no hard and fast line in practice to be drawn at the end of the twelve months, for the principles I have advocated ought in most cases to be acted upon for some months longer, until, in fact, the child has *two opposing molar teeth*. This is the only safe criterion that the starchy particles will be ground up and inti-

mately mixed with the saliva, and so rendered soluble and digestible.

No mention has been made of the exanthemata, or of whooping cough, and for this reason, that children at the breast enjoy an immunity from infectious disorders, thus clearly showing that the soil for the reception of the seeds of infection is rendered fertile by means of bad feeding. Supposing, however, that a naturally fed child did happen to catch measles, scarlet fever, or whooping cough, it is obvious that its chances of passing safely through the complaint would be vastly greater if it had lived previously on unirritating breast milk or milk and water, than if it had lived and did live on starch food, which we have seen is itself capable of producing rashes on the skin, spasm of the larynx, congestion of the lungs, and violent cough from irritation of the pneumogastric nerve, which cough frequently closely resembles whooping cough in its character.

Milk has been objected to as a diet for infants on account of the frequency of its adulteration ; but this is of little consequence, inasmuch as



the easiest, most common and profitable adulteration is the addition merely of water, and if there is reason to believe the milk to be so adulterated, all we have to do is to subject such milk to less dilution before giving it as a food.

One word by way of warning. Common to all cases of farinaceous feeding, where such food is suddenly withdrawn, there often is left a morbid excitement in the stomach, producing a craving sensation, and the child appears to be unsatisfied with natural food alone (something in the same way as a dram-drinker misses his usual stimulant), but a few days' perseverance with the breast or milk and water will allow time for this morbid irritation to subside, and with it the unnatural craving.

One word more as to stimulants. It is a general and common mistake to give sherry or port wine when an infant is being reared on milk, for the milk is thereby decomposed into curds and whey, and such curds are about as digestible as cheese. If it be deemed necessary therefore to give a stimulant, it is better to use spirits, such as brandy or gin, diluted to the

required strength. The neglect or ignorance of this precaution, when life and death are in the balance, will often give the scale a fatal inclination towards a premature grave.

My object having been to prove that nearly all the fatal diseases of infancy are preventable, and referable to one cause, namely, improper food, there has necessarily occurred a certain amount of repetition ; but I trust that by constantly hitting what I honestly believe to be the right nail on the head, I may have succeeded in driving conviction home to every intelligence ; for firmly convinced am I that until the principles here laid down are acted upon, little impression will be made on the mortality tables of infants. I feel, also, that I may appear to have written with unbecoming confidence, but my confidence in the absolute truth of these principles is founded upon almost daily observation during the last twelve years, confirmed by practice. I only regret that I have not the power of placing the truth before others in a stronger and clearer light. How-

ever, I have done my best, and by studying brevity and avoiding an unnecessary word, I indulge in the hope that these remarks may be read by men in active practice, who will have many opportunities of testing daily and proving for themselves the truth of all I have written. Any one with a spark of humanity must earnestly hope that I am as right as I believe myself to be; should this be so, the benefits accruing to mankind will be incalculable. Not only would the mortality be capable of immense reduction, but also an awful amount of suffering be avoidable; for, be it remembered, where one infant dies, many others only just escape with bare life, often with impaired intellectual and physical powers, the result of frequent convulsions; or at the best with damaged digestions. Again, for every infant that dies, there are, in the vast majority of instances, two fond parents' hearts lacerated, the scars often lasting throughout a life, shadowed over by the grave of their little offspring, untimely snatched away.

In Great Britain alone, the deaths under one

year amount to about 400,000 annually; of these the diseases we have been considering would account for at least three-fourths, but as we have seen that these diseases are produced by an easily avoidable cause, the mortality must therefore be equally avoidable to that extent. This would represent a saving of infant life to the amount of 300,000 annually. Oh! so easily saved, if it could be generally recognised that the time-honoured prejudice, in favour of (inevitable) teething being so largely instrumental in swelling the mortality is a delusion and a snare; and made known in every homestead throughout the land that the real cause is due to (evitable) improper food, usually farinaceous, and that the only safe, natural, and all-sufficient substitute for the breast is milk and water, unboiled, unsalted, and unsweetened.

The enormous difficulty of getting rid of old prejudices, and the slowness with which new truths are disseminated, make it improbable that during my time I shall see all the 300,000 saved; but I have great hope in the future, and

I trust I may live to see this great total largely reduced, and if by what I have written only one little body be saved alive, my labour will be amply rewarded.





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